Things - To - Remember
Chapter - 1 (Integers)

(1) **Integers :** The collection of number ..., −4, −3, −2, −1, 0, 1, 2, 3, 4, ... is called integer.
−1, −2, −3, −4, ... called negative integers
1, 2, 3, 4, 5, .. called positive integers.

2) **Successor** : one more then given number. Example, successer of 1 is 2, 10 is 11, −9 is −8 etc.

3) **Predecessor** : one less than given number give predecessor.
Example 3 is 2, 20 is 19, −9 is −10, 0 is −1.

4) **Additive Inverse** : of any integer a is (−a) and vice-versa.

5) when two positive (+ve) integers are added, we get a positive integers. e.g. (+3) + (+2) = +5

6) When two negative (−ve) integers are added, we get a negative integer. e.g. (−2) + (−1) = −3.

7) When one positive(+ve) and one negative (−ve) integers are added we subtract them and put the sign of the bigger integers. The biger integer is decided by ignoring the sign of the integers.
e.g. (+4) + (−3) = +1, (−4) + (+3) = −1

Product :

8) (+) × (+) = (gives) (+) −(−4) = +4
(−) × (−) = (gives) (+) −(+4) = −4
(+) × (−) = (gives) (−) +(−4) = −4
(−) × (+) = (gives) (−) +(+4) = +4

9) Commutative Property : $a+b = b+a$ i.e. $6+3 = 3+6 = 9$

$a \times b = b \times a$

10) Associative Property : $(a+b)+c = a+(b+c)$ e.g. $(2+3)+4 = 2+(3+4)$

$(a \times b) \times c = a \times (b \times c)$

11) Addition of zero (0) : $a+0 = 0+a = a$.

12) Multiplication by 1 : $a \times 1 = 1 \times a = a$

13) Multiplication by 0 : $a \times 0 = 0 \times a = 0$

14) Distributive property : $a \times (b+c) = a \times b + a \times c$

(or) $a \times b + a \times c = a \times (b+c)$

15) Division : $(+a) \div (-b) = \frac{-a}{b}$ $(-a) \div (-b) = +\frac{a}{b}$

$(-a) \div (b) = \frac{-a}{b}$

$$\frac{-a}{b} = \frac{a}{-b} = -\frac{a}{b}$$

16) $a \div 0$ is not defined, $a \div 1 = a$.

17) $(-1)^n = 1$ (When n is even)

$= -1$ (When n is odd)

Closure Property

18) Integers are closed under addition and subtraction.

$a+b$ — integer $b+a$ is also integer.

$a-b$ is integer $b-a$ is also integer.

19) Multiplication of two positive integers : $a \times b = b \times a$

20) Multiplication of (+ve) and (-ve) integers : $a \times (-b) = (-a) \times b = -(a \times b)$

21) Multiplication of two (-ve) integers : $(-a) \times (-b) = a \times b$

22) Integers are closed under multiplication

23) Integers are not closed under multiplication.